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A DRY BAIT FOR GRASSHOPPER CONTROL*

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It has commonly been observed that grasshoppers readily feed upon dry bran that has never been wetted. From this it was thought that an efficient dry bait might be prepared by spraying concentrated poison solution directly on to an attractive carrier. The advantages of a bait which does not quickly lose its attractiveness and which can be stored are obvious. The recent development of oil baits for grasshoppers arose from this need. Preliminary tests with a dry bran bait in Saskatchewan and Manitoba during 1940 and 1941 indicated that this bait was just as effective as the standard wet bran-sawdust bait. These results suggest that the use of dry baits, especially with cheap carriers, is a very promising field for further investigation. It was with the view of stimulating research by other workers that the present statement has been prepared.

Dry bran, on which sodium arsenite was sprayed, was tested with nymphal and adult grasshoppers. In 1940 the tests were with *Melanoplus mexicanus* (Sauss.) and in 1941 with this species and with *Camnula pellucida* (Scudder). In each year two methods were used. In one method grasshoppers were collected from field plots after baiting, placed in cages, and fed freshly cut vegetation for three days; the mortality was then calculated. In the other method, grasshoppers were kept in large field cages with growing vegetation and bait was spread as on the field plots; the mortality was determined after a week. In each instance every series had three replicates. In calculating the relative efficiency of the baits, the data were corrected for mortalities in the check cages.

The 1940 experiments indicated that the difference between the dry bran bait and the standard wet bait of equal bulk of bran and saw-dust carrier was not statistically significant; sodium arsenite was the poison in each bait. In two series from the field plot tests, these baits produced almost identical kills, the mean difference being only 0.54 per cent (standard error 18.390), while in the three series of field cage tests the dry bran bait gave 11.19 per cent greater kills (standard error 6.17). A more extensive set of tests in 1941 also showed that the difference in the efficiency of these baits was not statistically significant. In field plot tests with *Camnula pellucida* the dry bait averaged somewhat the greater mortality. Seven series had a mean difference of 4.12 per cent (standard error of 6.601); by eliminating two series of questionable value the mean difference, although 9.96 per cent was still not significant (standard error of 7.352). In seven series of field cage experiments with *Melanoplus mexicanus*, the baits produced practically identical results, there being a mean difference of only 0.72 per cent in favor of the standard bait (standard error 2.089).

The dry bran bait did not lump or mold over a period of several weeks. When used it was thoroughly dry and could not readily be distinguished from the original untreated bran. The bait spread well, especially with a wind when, because of its relative lightness, it carried farther than the wet baits. The dry bait was prepared by spraying sodium arsenite (8 lbs. as As_2O_3 per gallon) directly upon dry bran, at the equivalent of one quart of concentrated poison to one hundred pounds of bran. By using a spray gun that worked on an air pres-

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sure of forty pounds, it was possible to distribute the syrup-like concentrated sodium arsenite in a very fine mist; (with a vacuum cleaner, spraying could not be accomplished except by diluting the poison). The formation of droplets of fluid on the walls of the apparatus was almost entirely prevented by spraying the poison into the air stream which carried the bran, just as the bran entered a large box receptacle; air circulation for better distribution of material was accomplished by placing a fan in this box.

An efficient and cheap dry bait which is ready for field use without the addition of water presents so many advantages over wet baits that the development of dry baits should receive much more attention than in the past. A bait which remains attractive for a longer period than the present wet bait reduces the need of repeated applications and hence saves material, labour, and time in a critical period when farmers should be giving their full attention to farming operations. A light bait which will not readily lose its attractiveness and which can be spread at any time of the day is desirable, particularly for aeroplane spreading. Dry baits are well adapted to central mixing where a relatively few men can prepare the bait well in advance of the actual outbreak. In preparing the present wet bait, it is frequently difficult to obtain man power at the busy season and to meet the expenses of operating the local mixing stations. Contrasted with this, a dry bait, ready for immediate use, would be much simpler, easier and cheaper to handle. Another important factor is that, with a dry bait, the location of the depots for distribution need not be restricted to points where a water supply is available. A bait with the above advantages and which can be stored until required without molding, injury from storage pests, or being diverted for other uses has been long desired.

It has recently been learned with satisfaction that coincident with, but independent of, the present study some attention has been given to this subject by the United States Department of Agriculture.

The tests and analysis for the baits were conducted in cooperation with the Dominion Entomological Laboratory at Brandon, Manitoba, and were under the supervision of R. H. Handford to whom I am indebted for the mortality data and for assistance in preparing this paper. To L. G. Putnam and K. M. King who contributed materially to the development of the equipment, as well as aiding in the field tests, I also express my appreciation.

OBSERVATIONS ON THE ADULT OF *SANDALUS NIGER* KNOCH IN SOUTHERN ONTARIO (COLEOPTERA, RHIPICERIDAE)*

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There is apparently no mention in Canadian literature of the genus *Sandalus*. No Canadian specimens are present in the collections of the Royal Ontario Museum, Toronto, and there are only two specimens of *Sandalus niger* Knoch, from London, Ontario, at the Ontario Agricultural College, Guelph. Previous to the writer's donation, there were none in the Canadian National Collection at Ottawa. This paper presents observations on *Sandalus niger*, which is now known to be breeding in that part of the Niagara Peninsula

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adjacent to the Niagara River, and will give a picture of the species as it has been met with in this part of southern Ontario.

On October 9, 1940, a dead female was found on a sidewalk at St. Catharines, near Twelve Mile Creek. A quarter of a mile from that spot, a male of *Sandalus niger* was secured at noon on November 6, 1940, as it crawled across premises in the Twelve Mile Creek Valley. The latter specimen was chestnut brown in colour and unlike the more prevalent black forms. Mr. W. J. Brown, Division of Entomology, Ottawa, states that this colour variation is common, and occurs in the other American species of this family. At noon on September 22, 1941, a brood of *Sandalus niger* was noted at Niagara-on-the-Lake, Ontario. The writer first observed a male flying back and forth along the bank of the Niagara River in a gentle west wind which was blowing across the river's mouth. Subsequently, it rested on a nearby maple trunk, within arm's reach from the ground. On the same trunk, about a foot from the ground, a female was crawling upwards. A short distance away, on the ground, a second female was moving slowly toward the base of this tree. While these specimens were being captured, six males were counted flying rapidly around the trunk and out towards the river, seemingly in search of females. As it flew close to the ground, one of these males was knocked down and captured. No females were seen in flight. The flabellate antennae of the males were very apparent during flight, and males could not be confused with females which have serrate antennae. The male is also approximately a third smaller in size. On this particular day, the sun was very bright, and the temperature was about 80 degrees F., with low humidity. All specimens taken from the trees were found on the sunny side facing the river.

The most interesting flight record of this remarkable insect was closely observed on October 13, 1941, by Mr. G. H. R. Laidman at his home in the village of Queenston, a short distance north of the Lewiston Bridge. At least a hundred beetles, swarming like bees around a group of old Norway spruce trees on his front lawn, attracted his attention. He particularly noticed the bright orange colour on the dorsal surface of the abdomen when the wings were raised in flight. Fortunately, Mr. Laidman was able to knock down three males as they seemed to side-slip back and forth from the top of the spruces to the lower branches where they hovered momentarily. One dead female was found later in the day at the base of a spruce. There was a bright sun that day, and the temperature was estimated to be between 60 degrees and 65 degrees F.

What may prove to be a most important factor in the study of this beetle's life cycle is the fact that the ground below the spruce trees is the breeding place for hundreds of what appears to be the common cicada, *Tibicen linnei* (Smith and Grossbeck). The latter insect has been very abundant in this location for six years and skunks have caused considerable damage to the lawn in digging out the nymphs. The close association of the two species is of great interest because of Dr. F. C. Craighead's discovery in 1921 of a pupa of *Sandalus niger* within the body of a cicada nymph. This is the only record which appears to establish the parasitic nature of the beetle. It is possible that *Sandalus* may have a hypermetabolic life cycle similar to that of the Meloidae, as suggested by Dodge in his recent summary of observations on this species by American authors (1941, Ann. Ent. Soc. Amer. 34:485-486).

The above notes agree very closely with observations by earlier authors in the United States on the habits of the adult beetle. It is hoped that additional data on the life cycle in Ontario may be secured in the very near future.

NEW DOLICHOPODIDAE FROM UTAH AND COLORADO (DIPTERA) *

BY F. C. HARMSTON AND G. F. KNOWLTON†
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This report includes descriptions of five apparently new Diptera of the family Dolichopodidae. The Colorado specimens were studied through the cooperation of Doctors M. T. James and R. H. Painter. Doctor James is co-describer of *Scellus coloradensis* and *Rhaphium colutis*, which are here described as new.

***Neurigona uinta* Harmston and Knowlton, n. sp.**

Male. Length, 4.5 mm.; of wing, 4 mm. Face silvery pollinose, narrow, its sides nearly parallel, yet broader at extreme upper and lower portions. Front concolorous with face. Antennae (fig. 4) pale yellow; third joint broader than long, densely pale pubescent; arista brown, yellow at base. Palpi prominent, silvery white. Proboscis yellow. Orbital cilia wholly white.

Dorsum of thorax uniformly dull black, its surface densely covered with gray pollen; scutellum yellow, its base and central portion concolorous with dorsum of thorax; pleurae concolorous with dorsum, the posterior portion pale yellow; humeri yellowish-brown. Abdomen yellow with black bands, the second to fifth segments broadly blackened at base, yellow on caudal portions; the fifth segment possesses a pair of large black clasper-like structures into which the hypopygium fits when it is directed forward against the abdomen; hairs and bristles of abdomen mostly pale, those on ventral surface of third segment longer and more prominent. Hypopygium (fig. 7) of rather complicated structure, brown, with darker maculations and delicate pale hairs.

Coxae and all of legs yellow, the middle trochanters brown on lower surface; hairs and bristles of fore and middle coxae wholly yellow; posterior coxae each with a prominent pale bristle on outer surface; femora, tibiae and tarsi of plain structure, the fore tibiae nearly devoid of noticeable bristles. Length of fore tibiae as 30, the joints of fore tarsi as 25-14-7-4-3; of middle tibiae as 50, the joints of middle tarsi as 42-14-9-3-3; of posterior tibiae as 65, the joints of posterior tarsi as 19-20-11-7-4. Calypters and halteres pale yellow, the former with white cilia.

Wings (fig. 2) grayish hyaline, the veins yellow, broadest opposite the crossvein; anal angle moderately prominent, evenly tapering from the tip of sixth vein.

Described from 16 males, taken near Whiterocks, Uintah County, Utah, June 25, 1940, by G. F. Knowlton and F. C. Harmston. *Holotype* deposited in the U. S. National Museum; *paratypes* in the insect collections of the Utah Agricultural Experiment Station, California Academy of Sciences, University of Kansas, and in the Canadian National Collection.

Taxonomy. *Neurigona uinta* n. sp. together with *N. albospinosa* Van Duzee are the only species of the genus known from North America which have a prominent yellow bristle on the outer surface of hind coxae; in all others this bristle is black. The two species are readily separated by the color of the dorsum of the thorax, which in *uinta* n. sp. is uniformly blackish with thick gray pollen, whereas in *albospinosa* V. D. the dorsum of the thorax is marked with three prominent metallic brown vittae; the scutellum in *albospinosa* is uniformly black, whereas in *uinta* the scutellum is yellow, blackened at base and on central portion. Additional distinguishing points are found in the color of the middle and hind coxae, these structures being wholly pale yellow in *uinta*, but blackened at base in *albospinosa*.

*Contribution from the Department of Entomology, Utah Agricultural Experiment Station. Report on project 51-A, Hatch.

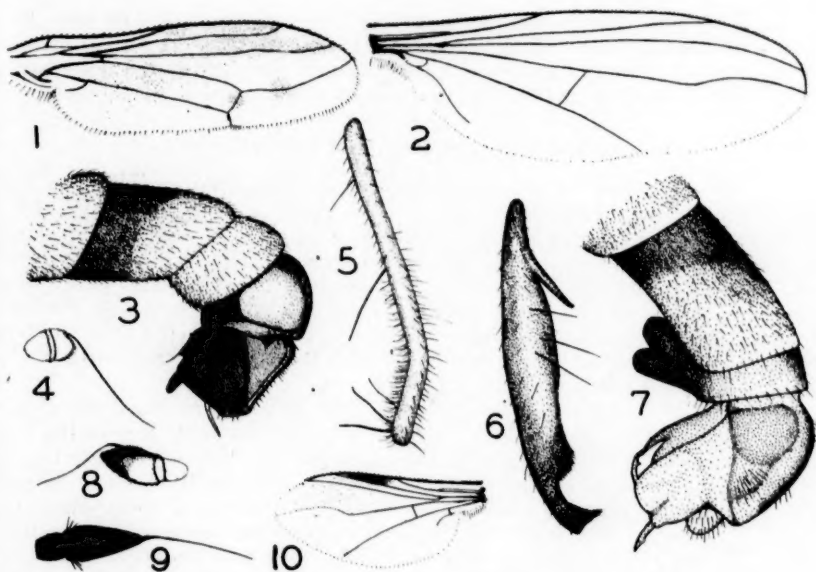
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A) *

Neurigona zlonensis Harmston and Knowlton, n. sp.

Male. Length, 4.5 mm.; of wing, 4.2 mm. Face narrow, silvery pollinose. Palpi concolorous with face, their anterior surfaces clothed with delicate pale hairs. Front grayish pollinose. Antennae yellow; third joint small, broader than long, densely pale pubescent; arista dorsal, brown. Orbital cilia pale.

Dorsum of thorax dull, brownish-yellow; a large spot before the base of each wing and a narrow central vitta, the latter broader on anterior portion and in the prescutellar depression, are dull black; scutellum wholly yellow; pleurae dull black, densely grayish pollinose, the posterior margin and an area above middle coxae yellow; propleura and humeri yellow. Abdomen yellow with black bands; first segment almost wholly yellow, with prominent black bristles; basal half of second to fourth segments broadly black, the apical portions yellow; fifth



Scellus coloradensis H. & J., n. sp., male, 1, 5-6. *Neurigona uinta* H. & K., n. sp., male, 2, 4, 7. *N. zlonensis* H. & K., n. sp., male, 3. *Asyndetus utahensis* H. & K., n. sp., male, 8, 10. *Rhaphium colutis* H. & J., n. sp., male, 9.

segment wholly yellow; bristles and hairs of the thorax and abdomen (with exception of those on fifth abdominal segment) wholly black; propleural bristle yellow. Hypopygium (fig. 3) shining black, its hairs pale, delicate.

Coxae yellow; anterior surfaces of fore pair with delicate pale hairs, the bristles at tip yellow; middle coxae with pale hairs on anterior surface and a few scattered black hairs on the outer apical half; posterior coxae and middle and hind trochanters each with a prominent black bristle upon outer surface. Femora and tibiae yellow, their hairs and bristles black. Fore tarsi blackened from the middle of first joint, the latter brown on basal half; last four joints appear somewhat broadened because of dense black hair on lateral margins; length of fore tibiae as 46, the joints of fore tarsi as 46-18-9-4-4; length of middle tibiae as 72 (all the middle tarsal joints are missing in the type specimen); length of posterior tibiae as 85, the joints of posterior tarsi as 31-27 (other joints missing);

posterior tarsi blackened from the tip of first joint. Calypters and halteres pale yellow, the former with white cilia.

Wings of the type are in poor condition; they appear similar to those of *N. uinta* (fig. 2) in venation and shape.

Described from one male, taken at Zion Canyon, Utah, July 13, 1939, by G. F. Knowlton and F. C. Harmston. *Holotype* deposited in the U. S. National Museum.

Taxonomy. *Neurigona zionensis* n. sp. is much like *N. dimidiatus* Loew in general appearance. The two species may be separated, however, by the color of hairs of the abdomen, which are wholly black in *zionensis*, yellow in *dimidiatus*; the hairs on anterior surface of middle coxae are partly black in *zionensis*, yellow in *dimidiatus*. Moreover, the apical joints of fore tarsi are somewhat broadened and fringed with prominent black hairs in *zionensis*, rather than of plain, slender structure as in *dimidiatus*.

Neurigona ciliata Van Duzee, like *N. zionensis*, has the fore tarsi black and somewhat flattened owing to coarse black hairs along the lateral margins; it differs from the latter species in having thoracic dorsum shining black, scutellum black at base and middle tibiae infuscated from the middle.

Seellus coloradensis Harmston and James, n. sp.

Male. Length, 3.4 mm.; of wing, 3.9 mm. Face long, extending to lower margin of eyes, rather narrow, especially on upper portion where its width is about equal to the length of third antennal joint, densely pollinose, appearing golden-yellow; front concolorous with face, appearing more brownish when viewed obliquely. Antennae black; third joint about as broad as long, with a slight notch on lower edge, evenly rounded at tip; arista arising from near the base. Lower orbital cilia and the whiskers white, the upper black cilia descend about one-half the eye height. Palpi concolorous with face, their anterior surfaces with delicate pale cilia. Proboscis shining black.

Dorsum of thorax grayish pollinose, with two narrow black vittae near the middle; portion immediately in front of scutellum with a beautiful red-bronze reflection; scutellum narrow, the apex truncate, bearing a single pair of strong marginal bristles; pleurae thickly dusted with grayish pollen, showing both bronze and green reflections in certain lights. Abdomen short, about the length of posterior basitarsus, the segments appearing compressed together, especially near caudal margin; color dull green with thin white pollen, evenly clothed with delicate yellowish hairs. Anal appendages slightly shorter than the length of abdomen, arising near dorsum between the fourth and fifth segments, blackened on about the basal half and on apical third, evenly tapering on basal two-thirds, slightly widened on apical one-third, evenly rounded at tip.

Coxae and all of legs blackish, lightly dusted with grayish pollen, the reflections appear bronze in some lights, greenish in others. Fore coxae with delicate pale hairs on anterior surface and a row of about 8 black bristly-hairs on outer apical three-fourths, the latter extending to the tip and forming the apical bristles. Fore femora thickened at base, evenly tapering toward tip, with a series of about 5 evenly spaced bristles on lower outer edge near the middle, and another similar bristle near the base; on basal half of lower inner edge with about 6 long bristles, this row ending abruptly near the middle, leaving apical half of the lower inner surface glabrous. Fore tibiae (fig. 6) about equal in length to their femora, thickened near the middle, with a prominent, flattened spur-like protuberance on inner surface near the base, deeply excavated on inner side near the apex, the anterior edge with two prominent hair-like bristles and a similar bristle situated between them, the latter directed more toward the inside. All tarsi of plain structure, the middle basitarsi with a row of delicate cilia on outer sur-

faces; joints of fore tarsi as 11-8-5-3-3; of middle tarsi as 19-7-5-4-4; of hind tarsi as 24-13-8-4-4. Middle femora somewhat laterally compressed, greatly arcuated on its basal half, without prominent bristles except for several bristles near the strong preapical bristle and a number of small, cilia-like hairs on lower edge near apex. Middle tibiae (fig. 5) plain on basal half, greatly bowed on apical half, the concave portion densely ciliate with long hairs which are curled at their tips, a few of the latter near the tip more bristle-like; on outer anterior surface near the middle with a single prominent bristle; on the posterior edge with long hairs. Posterior femora and tibiae plain, both nearly straight and without prominent hairs, the former with a single preapical bristle on upper edge near the tip, the latter with three short bristles at extreme tip on outer surface. Calypters brownish with delicate pale cilia. Knobs of halteres pale yellow, the stem infuscated.

Wings (fig. 1) slender; costa yellow to the tip of first vein, from which point it is blackened to the tip of fourth vein; anterior-apical three-fourths of wing largely tinged with brown.

Female. Face shaped as in male, its pollen silvery white; front dark brown, not shining. Dorsum of thorax and abdomen covered with dense golden-brown pollen, the posterior margins of abdominal segments narrowly blackened. Legs slender, of plain structure and chaetotaxy; deep red-bronze ground color showing conspicuously through the grayish pollen.

Described from 6 males and 18 females taken in Colorado. The *holotype* male, four *paratype* males and nine *paratype* females taken near Saguache, August 5, 1940, elevation 12,000 feet, by R. H. Painter. *Allotype* female, 1 *paratype* male and 6 *paratype* females taken at Trail Ridge Road, Rocky Mountain National Park, August 25, 1933, elevation 12,200 feet, by M. T. and Helen James; two *paratype* females taken at Stormy Peak, August 17, 1932, by M. T. James.

Holotype male deposited in U. S. National Museum; *allotype* female and several *paratypes* at Colorado Agricultural College; other *paratypes* in insect collections of the Utah Agricultural Experiment Station, Kansas State College, California Academy of Sciences and the University of Kansas.

Taxonomy. *Scellus coloradensis* n. sp. resembles *S. filiferus* Lw., *S. vigil* O. S., and *S. amplus* Cur. in general appearance. The following notes are given to aid in distinguishing the four species: *Scellus vigil* O. S. is easily distinguished from other species of the group in possessing a loose clump of delicate pale cilia near the middle of posterior femora on the inner surface. *S. amplus* Cur. may be distinguished by the anal appendages being slender on the basal and apical portions with a conspicuous widened area near the middle; it is the only species likely to be confused with those listed here having the anal appendages enlarged near the middle. *Scellus filiferus* Lw. is readily distinguished by the hyaline wings, the latter having a spot only on the last section of fourth vein and another spot on the posterior crossvein. The deep excavation, on inner surface of fore tibiae near the apex, (fig. 6) will distinguish *coloradensis* n. sp. from other small species with which it might be confused.

***Rhaphlum colutis* Harmston and James, n. sp.**

Male: Length, 4.4 mm.; of wing, 4.2 mm. Face narrow, silvery pollinose, except at extreme upper edge where it appears black. Front metallic, dark green, slightly dulled with grayish pollen. Antennae (fig. 9) black; third joint elongate-triangular, shorter than apical arista; second joint with conspicuous bristles on lower and upper edges. Palpi black with black hairs and thin white pollen upon anterior surfaces. Proboscis black. Orbital cilia and beard wholly black, the latter moderately abundant.

Dorsum of thorax and the scutellum metallic green; pleurae concolorous with dorsum, less shining, the surfaces dulled with white pollen; propleura with dense pale hairs. Abdomen metallic green, the posterior margin of all segments narrowly blackened; hairs of abdomen short, black except on the lateral margins of the two basal segments, where they are longer, delicate and white. Hypopygium black, the outer lamellae black, fringed with delicate brownish cilia, when viewed from behind appearing somewhat triangular with jagged apical margin; inner lamellae shining black, longer and more slender than the outer lamellae; appearing somewhat spoon-shaped and when viewed from the side appearing to be a continuation of the hypopygium.

Coxae black, the anterior surface of fore and middle pairs with long black hair-like bristles, those on the middle coxae not forming a spine at the tip; hairs on outer surface of posterior coxae white, not forming a spine at the tip. Trochanters and femora black; fore femora with strong black hairs and bristles on outer and lower posterior surfaces, especially dense and conspicuous near the base, devoid of any white hairs upon the lower or posterior surfaces; middle femora narrowly yellow at tip, bearing a few long pale hairs near the base of the lower posterior edge, a single outer preapical bristle and a series of about four longer inner bristles which terminate in the preapical bristle; posterior femora with a row of minute pale hairs on lower basal one-third, and a single rather short, outer preapical bristle. Fore and middle tibiae yellow, with conspicuous bristles upon their outer surfaces; posterior tibiae black, when viewed from behind the posterior edge appears brown except near the base and at the tip. Fore and middle tarsi blackened from the tip of first joint; fore tarsi with first and second joints somewhat narrowed at base, their upper surfaces with conspicuous hairs; middle basitarsi with three to four conspicuous bristles near the base on the lower surface; posterior tarsi wholly black. Joints of fore tarsi as 8.7-3.2-3½; of middle tarsi as 15.7-5.4-5; of posterior tarsi as 14-12-8-5-4. Calypters pale with thick pale cilia; halteres infuscated at base, the knob pale yellow.

Wings grayish hyaline; third and fourth veins nearly parallel beyond the tip of second vein, anal angle prominent, evenly rounded.

Female. Face nearly five times as broad as in male, golden brown pollinose. Front shining bronze, dulled somewhat with brown pollen. Third antennal joint short, triangular; arista nearly two times the length of antenna. Palpi broad, their anterior surfaces clothed with strong black hairs and brown pollen. Upper orbital cilia black, beard thick, sordid yellow. Coxae black, anterior surfaces of fore pair and the outer surfaces of posterior pair with pale hairs. Fore femora blackened on basal half, the lower outer surface with a row of long slender bristles; middle femora infuscated, with a few delicate pale hairs on lower basal one-half; posterior femora dark yellow, the tips somewhat infuscated. Fore and middle tarsi blackened from the tip of first joint; posterior tarsi wholly black.

Wings relatively larger than in the male.

Described from four males and four females. The *holotype* male, one *paratype* male and three *paratype* females taken at Pingree Park, Colorado, July 9, 1938, by M. T. James; *allotype* female and two *paratype* males taken at LaSal, Utah, July 24, 1940, by G. F. Knowlton and F. C. Harmston. *Holotype* and several *paratypes* in the Colorado Agricultural College insect collection; *allotype* female and one male *paratype* in the U. S. National Museum; several *paratypes* in the Utah Agricultural Experiment Station insect collection.

Rhaphium colutis n. sp. traces to *discolor* Zett., couplet 21 of the Curran key (Trans. Roy. Can. Inst., 15:254), from which it is readily separated by possessing long black hair upon the anterior surface of fore coxae, whereas in

discolor the anterior surfaces of fore coxae are clothed with long white hairs. *Rhaphium obtusum* V. D., like *colutis* possesses black femora, white face and black hairs on the anterior surface of fore coxae; it differs, however, from *colutis* in having white beard and long black hairs on the lower surface of all femora. The beard of *colutis* is wholly black, and only the fore femora have prominent black hairs upon the lower edge.

***Asyndetus utahensis* Harmston and Knowlton, n. sp.**

Male. Length, 3 mm.; of wing, 2.6 mm. Face short, leaving the lower corners of eyes sharply exposed, wide with nearly parallel sides, silvery white, yet the greenish ground color shows through on the upper portion. Front concolorous with face. Antennae (fig. 8) yellow, the apical half of third joint and the upper apical tip of second joint brown; third joint about two times as long as wide, obtusely pointed at tip. Palpi velvety black, with apical half white. Upper orbital cilia black, the lower cilia and whiskers white.

Thorax and abdomen bright metallic green, lightly dusted with white pollen; pleurae like the dorsum except that its surface is less shining; bristles and hairs of thorax and abdomen black; tip of abdomen with four prominent black bristles. Hypopygium embedded, not prominent.

Fore coxae dark green on basal half, yellow on apical half, middle and hind coxae dark green, almost black; anterior surfaces of all coxae with sparse, yet prominent, black hairs and bristles. Fore and middle femora yellow, the former on upper portion of basal half, and the latter on lower surface of basal half, dull metallic green, posterior femora narrowly yellow at base, the remainder metallic greenish-black; all femora, tibiae and tarsi of plain structure. Fore and middle tibiae yellow, the latter with a prominent bristle on outer surface near basal one-fourth; posterior tibiae black on apical half, the basal half brown. Tarsi wholly black, the joints of fore tarsi as 12-5-4-2½-2½; of middle tarsi as 14-7-4-3-2½; of posterior tarsi as 9-9-5-4-3; pulvilli prominent, white. Calypters and halteres pale yellow, the former with white cilia.

Wing (fig. 10) grayish hyaline, except along front margin from beyond the tip of first vein where the marginal cell is blackened, a smoky-appearing area just behind the blackened cell; second and third veins nearly parallel beyond the tip of first vein; fourth vein evanescent on distal one-fourth; anal angle prominent, evenly rounded.

Female. Female is like the male in general color and structure; the wing is longer and less broad; the second and third antennal joints are missing in the allotype, but it is probable that the third joint of the female in this species, as in others of this genus, is shorter than in the male.

Described from four males and one female all taken near Price, Utah, June 1, 1940, by G. F. Knowlton and F. C. Harmston. *Holotype* and *allotype* deposited in the U. S. National Museum; *paratypes* in the insect collections of the Utah Agricultural Experiment Station and the California Academy of Sciences.

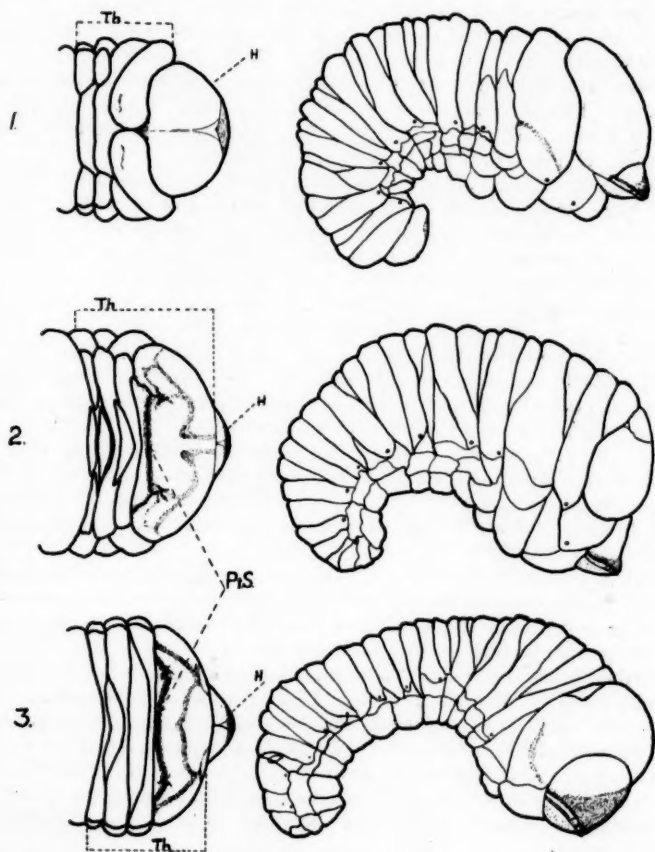
Taxonomy. This interesting little species is the only *Asyndetus* known from North America in which the basal two antennal joints are yellow; it is, in addition, the only known member of the genus possessing a prominent black spot upon the wing.

LARVAL CHARACTERISTICS OF CERTAIN ELM BARK INFESTING COLEOPTERA

BY PHILIP P. WALLACE AND RAIMON L. BEARD.

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There commonly occur in the bark of decadent elms certain species of coleopterous larvae which are often difficult to distinguish unless they can be positively associated with their maternal egg gallery. In handling large numbers of these larvae for precise experimental purposes and in field work, satisfactory criteria for exact identification consisting of definite external morphological characters, capable of rapid use, are necessary.



Dorsal aspect of anterior end and lateral aspect of larvae:
1. *Hylurgopinus rufipes* Eichh. 2. *Scolytus multistriatus* Marsh. 3. *Magdalis* sp. H, head;
Th, thorax; Pl.S., protergal suture.

The species considered are the larvae of *Scolytus multistriatus* Marsh., *Hylurgopinus rufipes* Eichh., and the *Magdalis* weevils, *M. armicollis* Say and *M. barbata* Say. It is difficult, if not impossible, to differentiate between the larvae of the two latter species. In unpublished notes Hoffman (1939) prepared a key based principally on the relative pubescence of the venter of the thoracic segments

for the separation of these groups, and Kaston (1936) presented a detailed description of the larva of *H. rufipes*. A brief note on characters which separate these species is given by Wallace (1939). Although the abundance of pubescence and the position of setae are excellent morphological features, they are impractical for field use or for rapid separation of species. Certain constant larval characteristics are presented below which have been found usable in the field and allow a rapid identification among these three groups.

The larvae of these species are legless and scolytoid in form. Although they differ in size when fully developed, the three groups often occur with galleries interlaced, and all may be approximately similar in size and general appearance. It is often possible, however, to separate fully developed larvae of *Magdalis* spp. on the basis of their size alone, since neither of the other species ever attain the ultimate size and body shape of the fully grown *Magdalis* larvae. The sketches below are representative of the groups, regardless of their stage of development.

Scolytus multistriatus Marsh. Across the posterior half of the pronotum there occurs a transverse fold in the integument. This suture appears as a definite, straight line terminating in a puckered or asterisk-shaped depression on each side of the pronotum.

Magdalis spp. A transverse fold in the dorsum of the prothorax is present in a similar position and terminating as that stated above, but the appearance of the line is distinctly arcuate rather than straight. In addition, the integument of the prothorax is more heavily sclerotized than in either of the other two species considered. Slight differences in the shape of the abdominal segments and body curvature are not considered to be sufficiently distinctive characteristics when larvae of a similar size are compared.

Hylurgopinus rufipes Eichh. The dorsal area of the prothorax in lateral aspect is more rounded than in the preceding species, and the head protrudes farther. There is no transverse fold in the dorsum of the prothorax in any way similar to that of the other species mentioned above.

Difficulty may arise when larvae of *Scolytus sulcatus* Lec. must be considered. Although they have been found in the same log with *S. multistriatus*, they often develop without the interference of other bark beetles. The larger larval tunnels and deeper sapwood engraving may serve to warn the investigator that he is dealing with a different species, and adults should be examined. The larvae of *S. sulcatus* are characterized by a transverse fold in the integument of the prothorax identical with that of *S. multistriatus*. Fully developed larvae of *S. sulcatus* attain a larger size but are otherwise indistinguishable from *S. multistriatus*.

The much larger size of the mature larvae of *Scolytus scolytus* Fab. may assist in identification in the countries where they are encountered. This species, as well as *S. rugulosus* Ratz., possesses the straight, transverse fold across the posterior half of the prothorax, and this appears to be characteristic of the genus, *Scolytus*.

Although the structure of the endothorax of these larvae has not been studied in detail, it is evident that the protergal suture referred to above is distinctly related to the attachment of muscles, and as indicated by Snodgrass (1935) it is a definite morphological character.

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NEW NORTH AMERICAN TACHINIDAE BELONGING TO THE GENERA
MICROCHAETINA AND *HYPENOMYIA* WITH KEY TO THE
 KNOWN SPECIES (DIPTERA) *

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The genera here under consideration are largely western and southwestern in distribution. Little or nothing is known concerning their biology or host relationships. Characters common to both genera include the following among others: eyes bare; parafacials setose to bristled; facial ridges practically bare; epistoma narrow and somewhat elongated; arista short plumose; propleura bare; prosternum setose; apical cell closed with long petiole reaching costa far before wing tip; costal spine large; sides of postnotum beneath calypters haired. The genera are readily separated by the characters listed in the following key. Among the species here included, I have not seen any specimens of *Microchaetina mexicana* and *M. cinerea*. The last mentioned, from Mexico, is the genotype. The genotype of *Hypenomyia* is *petiolata*; the type series included two females from East Verde River, Arizona (Townsend) and both sexes from Los Angeles County, California (Coquillett). Types of the new species described below are in my collection.

KEY TO SPECIES OF *MICROCHAETINA* AND *HYPENOMYIA*

1. Last section of fifth vein exceeding one-half length of preceding section; apical scutellars small to vestigial not decussate. *Microchaetina*.....2.
- Last section of fifth vein less than one-half length of preceding; apical scutellars strong and decussate. *Hypenomyia*.....5.
2. Body gray or cinereous pollinose.....3.
- Front, thorax and abdomen golden pollinose; notum vittate; antennae largely reddish (New Mexico).....*M. mexicana* Towns.
3. Hind cross vein much nearer to small cross vein.....4.
- Hind cross vein nearly midway between small cross vein and bend; first vein setulose; parafacial with irregularly placed bristly hairs on lower part (Mexico).....*M. cinerea* v. d. Wulp.
4. Last section of fifth vein as long as preceding section; parafacial narrower than clypeus with a single row of bristly hairs below near eye margin (Southwestern United States).....*M. valida* Towns.
- Last section of fifth vein three-fifths length of preceding; parafacial subequal clypeal width, with irregularly placed bristly hairs on entire lower half (Kansas).....*M. setifacies* n. sp.
5. Scutellum wholly black.....6.
- Scutellum reddish on apex; palpi black; wings strongly infuscated near base and on costa; thorax and abdomen thinly pollinose and subshining (Utah, California, Oregon, Washington).....*H. rubidiapex* n. sp.
6. Body gray or cinereous pollinose; wings subhyaline with a brownish tinge along the three cross veins; bend of fourth vein bearing a long stump (Arizona, Mexico, California, Oregon).....*H. petiolata* Towns.
- Body subshiny black, abdomen thinly gray pollinose, wings dark brownish basally and along costa; bend of fourth vein with a short infuscated fold, male only (Utah).....*H. subnitens* n. sp.

***Microchaetina setifacies* n. sp.**

A smallish cinereous species, which differs from the genotype, *M. cinerea*, in having the first vein of wing bare, parafacials more heavily bristled and the hind cross vein distinctly nearer small cross vein than bend of fourth.

*Contribution No. 725, Division of Entomology, Texas Agricultural Experiment Station.

Male. Head hardly wider than high, vibrissal axis about three-fourths antennal; front at vertex 0.26 and 0.24 (in two specimens) of the head width, narrowed before ocellar triangle thence widening rapidly to base of antennae; frontal stripe deep red, equibroad, wider than one parafrontal except on anterior extremity; parafrontal gray pollinose, sparsely short-haired; frontal bristles not very strong extending in a single row from base of antennae nearly to ocellar triangle; latter bearing two pairs of good-sized nondivergent proclinate bristles; postocellars distinct; verticals one pair (inner) developed, suberect but not very long; face moderately impressed, slightly concave in profile, its ridges with three or four bristles above vibrissae; latter somewhat approximated and nearly length of second antennal segment above anterior edge of mouth; parafacial gray pollinose, subequal maximum width of clypeus, hairs on upper half short but distinctly coarser or more bristly below and irregularly placed from eye margin inward to cheek groove; cheek reddish in ground color, lightly dusted with gray pollen, fully one-half eye height; antennae about two-thirds as long as face, basal segments yellow, first short, second over three-fourths length of third, which is black except on base; arista short plumose, shorter than antennae, thickened near base, proximal segments short; proboscis moderately slender, hardly exceeding one-half head height; palpi yellow, rather slender and but slightly thickened apically; back of head gray pollinose, sparsely clothed with black hairs.

Thorax and scutellum black, densely gray pollinose, notum not distinctly vittate, but four narrow dark stripes faintly defined before suture. Chaetotaxy: acrostichal 2, 3; dorsocentral 2, 3; humeral 2-3; posthumeral 1; presutural 1 (outer); notopleural 2; supraalar 3; intraalar 3; postalar 2, sternopleural 1, 1; proteropleural 1 (shorter than sternopleurals); scutellum with 2 lateral, 1 good-sized divergent apical and 1 smallish discal pair; infrascutal hairs present; infrascutellum normally developed; prosternum weakly bristled; propleura bare; calypters opaque white, hind lobes longer than wide.

Abdomen moderately broad, ovate, black, wholly gray pollinose; first segment without median marginal bristles; second with one pair set well before hind margin; third with a marginal row becoming subdiscal above; fourth with a discal and a marginal row; genitalia small, retracted; inner forceps united, flat on hind side and about as broad as long, apex obliquely narrowed and notched at middle with each inner apical extremity slightly produced; fifth sternite blackish, with a rather deep V-shaped apical incision; lobes sparsely short-haired; sternites covered.

Legs blackish with tibiae showing a yellowish tinge in the ground color; middle tibia with two bristles on outer front side near middle; hind tibia not ciliate; claws and pulvilli elongate.

Wings subhyaline; veins including costa yellow, first bare, third with two bristly hairs near base; first posterior cell closed, petiole about three-fourths length of apical cross vein, reaching costa well before extreme wing tip; bend of fourth vein rectangular with a short stump; hind cross vein considerably retracted, joining fourth hardly two-fifths distance from small cross vein to bend; last section of fifth vein about three-fifths length of preceding section; costal spine strong, exceeding length of small cross vein; epaulets yellowish. Female not known.

Length, 6-7 mm.

Holotype: Male, Manhattan, Kansas, October 16, 1926 (R. H. Painter).

Paratype: one male, same data as type.

***Hypenomyia rubridiapex* n. sp.**

More robust in build and blacker in general aspect than the genotype, *H. petiolata*, from which it is further distinguished in having the apex of scutel-

lum red and the wings more distinctly infuscated. There are additional minor differences.

Male. Head slightly wider than high; vibrissal axis about five-sixths length of antennal; frontal profile sloping and fully one-fourth longer than facial; front at vertex 0.20 of head width (four specimens measured; 0.19; 0.21; 0.20; 0.20), narrowed before triangle then widening forward to almost one-third head width at base of antennae; frontal stripe velvety black, tapering gradually toward triangle; parafrontal extremely narrow above middle and widening rapidly below, gray pollinose but thinly so near vertex; frontal row diverging anteriorly, two or three bristles beneath base of antennae, uppermost bristles weaker and stopping before ocellar triangle; inner verticals erect, rather weak, outer pair vestigial; ocellars long, proclinate but not divergent, with numerous bristles and hairs between latter and postocellars; antennae mostly black, reaching almost to lower fourth of face, first segment short, second thick and densely short-haired on front side with one longer bristle approximating length of arista; third segment rather slender and only a trifle longer than second; arista short plumose to tip, blackish, thickened on basal third thence slender and brownish to tip, basal segments short; face not deeply impressed, thinly gray pollinose on black ground color becoming reddish below on the slightly produced oral margin; vibrissae strong, decussate, with a few bristly hairs extending on ridges immediately above; postvibrissae usually well differentiated; parafacial black, gray pollinose, hardly equal clypeal width, with black coarse hairs on entire surface from upper extremity to middle thence extending diagonally downward to lower margin of eye; cheek two-fifths eye height, lightly gray pollinose on black ground color; proboscis short, less than one-half head height; palpi blackish, slender, hardly at all thickened apically; eyes bare; back of head gray pollinose moderately clothed with black hairs.

Thorax black, thinly gray pollinose, notum subshining not distinctly vittate; scutellum black with apex reddish, lightly dusted with changeable whitish pollen. Chaetotaxy: acrostichal 2, 3; dorsocentral 3, 3; intraalar 3; supraalar 3; presutural 1 (outer); posthumeral 1 or 2; humeral 4-6; notopleural 2; postalar 2; sternopleural 4 to 6 (usually 4); pteropleural 1 (not equal sternopleural); scutellum with 3 lateral, 1 long decussate apical, and 1 discal pair; infrascutellum normally developed; infrascutal hairs present; prosternum haired; propleura bare; calypters semitransparent, whitish but hind lobes sometimes infuscated along inner and basal margin.

Abdomen long ovate, black, subshining with changeable gray pollen on entire upper surface, venter more distinctly shiny; basal segments each with one pair of median marginals; intermediate segments strongly bristled on sides with a discal pair sometimes irregularly spaced on each, besides a submarginal row on third; fourth segment bristled on entire upper surface; genitalia ordinary in size, retracted; inner forceps thin in profile, flat behind with median line slightly raised, tapering gradually outward to an acute divided tip; outer forceps wholly shining black, about as long as inner ones but thicker with blunt or rounded tips; sternites exposed apically, fifth with a deep apical V-shaped incision, lobes shining black and beset with fine longish hairs.

Legs black with tibiae more or less reddish beyond middle; claws and pulvilli long; middle tibia with two or more bristles near middle on outer front side; hind tibia with a row of about six or seven bristles on outer posterior edge, two or three near middle considerably longer than others.

Wings extending well beyond tip of abdomen, with a strong brownish tinge near base along costa and the three cross veins; first posterior cell closed, petiole two or more times length of small cross vein, reaching costa well before wing tip; bend of fourth vein rectangular, usually with a short stump or fold; first vein bare, third setulose near base; hind cross vein bicurved, joining fourth

about two-fifths distance from bend to small cross vein; last section of fifth vein not quite half as long as preceding section; costal spine strong, distinctly longer than small cross vein; epaulets blackish.

Female. Front at vertex 0.35 and 0.38 of head width (in two specimens), widening gradually downward to antennae; frontal stripe red, at middle slightly wider than parafrontal; two proclinate and one reclinate orbital bristles; ocellars slightly divaricate; outer verticals developed; basal antennal segments bright yellow; face including lower part of sides and cheeks red in ground color; cheek exceeding one-half eye height; thorax and abdomen rather densely pollinose, former distinctly vittate above; genitalia retracted not adapted for piercing; claws and pulvilli short; otherwise mainly as in male.

Length: Male, 8.9 mm.; female, 7-8.5 mm.

Holotype: Male, labeled "Utah 1927". *Allotype,* female, Wenatchee, Washington, September 15, 1928, no collector's label. *Paratypes,* three males labeled as follows: Green Canyon, Cache Co., Utah, September 1, 1940 (Wm. P. Nye); Oregon, June 22, 1928; Devore, California, May 21, 1928; and one female, Rainier National Forest, Washington, September 16, 1935 (J. Wilcox).

Hypenomyia subnitens n. sp.

Very similar to the preceding species but less robust in build, blacker and more distinctly shiny. Other differences in the male sex may be noted as follows: Front at vertex 0.13 of the head width, widening to about three-fourths eye width at base of antennae; face strongly receding and concave in profile; parafacial with coarse hairs on outer half above continuing in a row near eye margin to lower extremity, about two-thirds clypeal width; cheek one-third eye height, red in ground color on upper part; proboscis hardly two-fifths head height, not very stout; palpi dark brown, rather short and somewhat thickened apically. Thorax black and rather shiny but with thin pale pollen visible on notum; scutellum wholly black; chaetotaxy as mentioned above. Abdomen with two pairs of discs on intermediate segments and a well differentiated pair on first; genitalia as described but the outer forceps reddish yellow on broad basal part. Legs wholly black. Petiole of first posterior cell only slightly longer than small cross vein. Female not known.

Length, 8 mm.

Holotype: Male, Garden City, Utah, July 31, 1940 (G. F. Knowlton and F. C. Harmston).

TWO MILLIPEDS OF THE GENUS *RHYSODESMUS* FROM MEXICO

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The type specimens of the two species of *Rhysodesmus* described below were collected by Mr. Phil Rau, through whose courtesy the author received them for study. The specimens are at present in the author's collection.

Rhysodesmus potosianus n. sp.

The color of the dorsum in the preserved specimens is brown with the entire keels yellow but with no yellow cross bands on posterior segments, but these showing on anterior segments on middle section of caudal border. Legs and antennae yellow.

Collum of usual shape, smooth and shining throughout.

Caudal margin of anterior keels a little convex proximally and a little incurved distally just proximal of the posterior angle which is a little produced. Surface appearing smooth and shining but under the microscope showing numerous short, curved or wavy and irregularly anastomosing impressed lines.

Characterized by the unusually short and straight accessory branch of the male gonopods. See figure.

Width, 11 mm.

Locality. Mexico: San Luis Potosi, Tamozuachole. Two males received from Mr. Phil Rau.

From the other species of *Rhysodesmus* here described, *R. potosianus* differs in the short, straight accessory branch of the male gonopods. It differs from *R. eusculptus*, which also lacks cross bands which are absent or obscure on most tergites of the present species, in larger size, in having the entire keels yellow instead of only the lateral borders and, more importantly, in lacking the strongly marked dorsal tubercles.

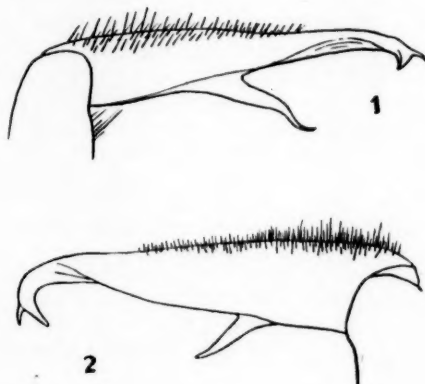


Fig. 1. *Rhysodesmus cuernavacae* n. sp. Left gonopod of male, exterior view.

Fig. 2. *Rhysodesmus potosianus* n. sp. Right gonopod of male, exterior view.

***Rhysodesmus cuernavacae* n. sp.**

Dorsum brown, without lighter cross bands but entire keels, or all except a small portion at very base, yellow. Antennae brown and legs yellowish brown.

Posterior border of keels typically convex over basal portion and concave over the distal, the posterior angles being thus distinctly produced and more or less acute. Dorsum smooth, without indication of tubercles.

Posterior margin of sternites straight.

Gonopods of male in ventral view nearly straight, the more slender apical portion a little curved outward. Accessory branch of good length, its apex extending to or a little beyond setose portion of principal branch, of form shown in the accompanying figure.

Length, 35 mm.; width 8.5 mm.

Locality. Mexico: Morelos, Cuernavaca. July 10, 1940. One male taken by Phil Rau.

In form of gonopods suggesting *R. notostictus* Pocock, but the accessory branch showing a somewhat sigmoidal flexure absent in the latter form, etc. It is a larger species, the width of 8.5 mm., contrasting with 5.5 mm. in male of *notostictus*.

NOTES ON PANTHEINAE (LEPIDOPTERA, PHALAENIDAE) *

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***Colocasia propinquilinea* Grt.**

I am by no means certain that *flavicornis* Sm. can be considered distinct specifically from *propinquilinea* Grt. Originally described as *Demas flavicornis* from a New Jersey specimen in the Graef Collection (which should now be in the United States National Museum) it was probably considered distinct from Grote's species, described under *Charadra*, on generic characters. Later, Smith, after seeing Grote's female type in the British Museum (figured by Hampson, Cat. Lep. Phal., XIII, Pl. 234, fig. 4), made the two names synonymous (1893, Cat. Noct., 32) but again separated them in his *Acronicta* revision, claiming among other things that the male genitalia showed distinctions; however, in this work Smith's idea of the genitalia was based on fragments (cf. Benj. 1935, Pan. Pac. Ent., XI, 151), and certainly his figures of the claspers bear little resemblance to the real organs. Slides of genitalia made from three males of *propinquilinea*, selected from a long series from the Ottawa region, and compared with slides of two New York males which appear to be typical *flavicornis* as generally recognized and as figured by Hampson (*op. cit.*, fig. 3) show, it is true, some slight differences, notably in the shape of the uncus, the weak spining of the dorsal portion of the anellus and the spine-band of the aedeagus; however, taking into consideration the fact that almost as much variability in these sections is shown between my three Ottawa specimens as between the two series, I have doubts as to whether the above mentioned differences can be considered sufficiently great to be used for specific differentiation. My material of *flavicornis* is unfortunately not extended enough to decide the question definitely.

Infanta Sm., sunk as a synonym of *flavicornis* might, judging by the description, be considered a melanic form of *propinquilinea*; *electa* Sm., based on two females from Winnipeg, Man., one of which is in the Canadian National Collection, seems pure and simple *flavicornis* and the name is scarcely worth retaining, even in a doubtful racial sense.

***Panthea virginaria* Grt.**

This description was based on a single female from Soda Springs, Calif., a small resort in the Upper Sacramento Valley near Dunsmuir and a favorite haunt of Behrens; the holotype is figured by Hampson (Cat. Lep. Phal., XIII, Pl. 234, fig. 10). I have seen no material from the type region but our Rocky Mt. specimens, especially some females from Kaslo, B. C., seem to match Hampson's figure very well. Based on this identification our collection possesses specimens from the following localities: Rocky Mt. National Pk. (Spragues, Mt. Arapahoe) Colo.; Bozeman, Mont.; Nordegg, Alta.; Field, B. C.; Kaslo, B. C. According to genitalic slides of males from Colorado and Nordegg, Alta., *virginaria* would seem to be merely a large western race of *acronyctoides* Wlk.; both show a recurved uncus drawn to a rather sharp point and in both the armature of the aedeagus consists of a short apical spine together with a much longer slender one. It might be worth noting that Hampson's figure (*op. cit.*, fig. 9) of *gigantea* Frch. hardly represents this species, which is correctly figured in Smith's revision (Pl. IX, figs. 2, 3).

***Panthea portlandia* Grt.**

The usually accepted idea of this species is represented by Hampson's fig. 8, from a Vancouver Island specimen. Apart from its much paler coloration *portlandia*, as thus defined, is separable from *virginaria* by the longer pectinations

Contribution No. 2138, Division of Entomology, Science Service, Department of Agriculture, Ottawa.

of the male antennae and by the presence in the aedeagus of the male genitalia of a *thick sickle-shaped spine* in place of the long slender one of *virginaria*, the smaller spine being present in both species.

From the rearings of our Forest Insect Survey unit I have before me a specimen from the Upper Thompson River, B. C., which, while agreeing with *portlandia* in male antennae and genitalia, has the primaries evenly suffused with deep smoky-gray, the whole insect presenting very much the appearance of Hampson's erroneous *gigantea*, with which, indeed, it might easily agree.

For this probable race I propose the varietal name *SUFFUSA* var. nov., the Holotype being a male from Dixon Creek, Barriere, B. C., July 28, 1938, (F. Johnson); from *Picea engelmanni*; No. 5282 in the Canadian National Collection, Ottawa.

***Panthea furcilla* Pack.**

A study of male genitalia showed that our Canadian specimens going under this name were distinct from a small series from Lakehurst, N. J., sent as *furcilla*. Specimens of both were sent to Dr. Banks at the Museum of Comparative Zoology, Cambridge, Mass., for comparison with Packard's type. Dr. Banks informs us that the Lakehurst specimens represent the true *furcilla*, the type being the Harris specimen mentioned in the original description, (now in Cambridge ex Coll. Bost. Soc. N. H.) the Sanborn specimen being apparently lost. The male genitalia of *furcilla*, as thus defined, show in the aedeagus, besides a short, thick pointed cornutus, an apical spine of the so-called "rose-thorn" type. The primaries are of a rather even purplish-gray with all cross-lines very heavy and black and with scarcely any white edging except outside of the s. t. line.

Our Canadian species, heretofore known as *furcilla*, lacks the "rose-thorn" in the aedeagus entirely; there is more white suffusion on the primaries, especially in the cell and edging the t. p. line which is finer and more irregular than in true *furcilla*, and the dark areas lack the purplish tinge of our Lakehurst specimens. The name *pallescens* McD. proposed by me (1937, Can. Ent., LXIX, 153) for the pale Nova Scotian race will apparently have to be elevated to specific rank and applied to our Canadian species as a whole. The darker race of Ontario and Quebec, as rather poorly figured by Hampson (fig. 7) under *furcilla* may be known as var. *CENTRALIS* var. nov.

Holotype—♂, Norway Bay, Que., July 4, 1938, (E. Lester); No. 5283 in the Canadian National Collection, Ottawa.

Allotype—♀, same data, July 27.

Paratypes—10 ♂, 1 ♀, same locality, various dates in July (Lester and Hobbs); 1 ♀, Aylmer, Que., July 19, 1932, (C. B. Hutchings).

A melanic form of *centralis* occurs with moderate frequency. This is characterized by a heavy black-brown suffusion on primaries, leaving a variably distinct white inner edging to t. a. line and similar outer edging to t. p. and s. t. lines. This may be known as form *ATRESCENS* form. nov.

Holotype—♂, Norway Bay, Que., July 16, 1937 (E. G. Lester); No. 5284 in the Canadian National Collection, Ottawa.

Allotype—♀, same data, May 31, 1938, (G. Hobbs) (ex larva).

Paratypes—3 ♂, 1 ♀, same locality, July 14, 25, 30, (Hobbs and Urquhart).

Genus *Pseudopanthea* gen. nov.

Differs from *Panthea* in the smooth, largely scaly vestiture of thorax and the presence of a distinct mesothoracic scale-tuft. The male genitalia are abundantly distinct from those of *Panthea*; the uncus is very broad and squarely cut off apically; the claspers are short and chunky with convex costa and slightly up-turned, pointed apex, the harpe represented by a raised chitinous flap near ven-

tral edge preapically; the transtilla forms a short blunt projection at base of costa; the aedeagus is broad and unarmed.

Genotype. *Charadra (Panthea) palata* Grt.

Neither in maculation nor in genitalia does *palata* show any close relationship to typical members of the genus *Panthea* and I believe a new genus is indicated. *Egua* Dyar, based on material from Jemez Springs, N. M., is, judging by topotypical material before me, merely a smaller, darker race of *palata* with less decided maculation. In Utah another race occurs, characterized as follows:

***Pseudopanthea palata* v. *utahensis* var. nov.**

Ground color of both thorax and primaries paler than in the typical form, whitish, slightly sprinkled with smoky and with very distinct maculation in black. Lower portion of median area between fold and inner margin largely filled with black, forming a prominent rectangular patch. Secondaries pure white with faint smoky terminal line.

Holotype—♂, Dividend, Utah, June 5, (T. Spalding); No. 5285 in the Canadian National Collection, Ottawa.

Paratype—1 ♂, Spanish Fork, Utah, June 3, (G. F. Knowlton).

***Charadra deridens* Wlk.**

In the Check List the melanistic form of this species has been listed as form *fumosa* Draudt and *nigrosuffusana* Strnd. placed as a synonym of *deridens*. As, however, both names are obviously based on Hampson's "ab. 1" and as Strand's name has priority, the dark form should in future be known as form *nigrosuffusana* Strnd. with Draudt's name as a synonym.

NOTES

THE STING OF *POLISTES PALLIPES* LEP.

It is said that one's appreciation of a poem is in direct ratio to the understanding or experience that one brings to the subject. In that event, I boldly lay claim to being Robert Frost's most understanding reader of his poem "The White-tailed Hornet", in the lines:

"Verse could be written on the certainty
With which he penetrates my last defense
Of whirling hands and arms about the head
To stab me in the sneeze-nerve of a nostril."

For that vivid experience was mine; I too happened to be stung on the tip of the nose by a queen or worker of *Polistes pallipes*.

The sting of *Polistes* of the temperate regions is usually not severe; the pain lasts only from ten minutes to a half-hour, unless the wound is in an especially sensitive spot, as the eye-lid. This sting was the most damaging injury that I have ever received from a *P. pallipes* wasp. The pain lasted only a half-hour, but the upper lip was swollen and numb for two hours. There was also a continual running of the nose and many fits of violent sneezing, which lasted for two additional hours. During the next few hours, the watery nose, the numbness of the lip, and the sneezing gradually subsided, and ten hours after the attack the situation had cleared sufficiently that I was almost unmindful of having been stung.

Phil Rau,
Kirkwood, Missouri.

RHAMNUS ALNIFOLIA L'HER., A WINTER HOST OF *APHIS ABBREVIATA* PATCH,
ONE OF THE APHIDS FEEDING UPON POTATO FOLIAGE

Rhamnus cathartica L., the common European buckthorn, has long been known as a winter host plant upon which the ovipositing form of *Aphis abbreviata* Patch deposits eggs in autumn. The shrub is not widespread in New Brunswick, being found chiefly in and near some of the older towns where it was planted as a hedge plant many years ago. The aphid survey conducted in New Brunswick during the past eight years has shown that the species, *Aphis abbreviata* Patch, occurs quite commonly in a number of places where no specimens of *Rhamnus cathartica* L. are known to grow. This fact led to search being made for a native species of buckthorn, *Rhamnus alnifolia* L'Her., which had been reported by Dr. Edith M. Patch in Maine Agricultural Experiment Station Bulletin No. 323, 1925, to be a common winter host plant in the state of Maine. This shrub was noted in Chamberlain's list of the plants of New Brunswick, published in 1885, as found in three places in the province, but it would seem not to have been noted later. The search in late September revealed the presence of the shrub in wet pasture land east of Grand Falls in Victoria County and the fact that the return migrant aphids of the species *Aphis abbreviata* Patch were clustering thickly upon the leaves and stems and that oviposition was beginning.

Examinations in late October showed that there were then from ten to thirty-five eggs of the aphid beside each bud and that every crevice in the bark was packed with the polished black eggs of the insect. The plants were within five hundred feet of a one hundred and sixty-five acre field of potatoes which, in August, had supported one of the most severe infestations of this aphid seen in years.

A brief survey of the swamp areas on other farms in the district showed that the shrub was present in limited abundance in several places and that, wherever found, it bore large numbers of aphid eggs. The shrub was easily recognizable after the leaves had fallen by its very dark coloured stems and peculiar habit of growth, different from the form of any other common plant in the region. *Rhamnus frangula* L. a recently introduced European hedge plant in York County, New Brunswick, was also found to serve as a winter host plant for this aphid.

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